

**IN THE UNITED STATES DISTRICT COURT  
FOR THE DISTRICT OF MASSACHUSETTS**

SINGULAR COMPUTING LLC,

Plaintiff,

v.

GOOGLE LLC,

Defendant.

C.A. No. 1:19-cv-12551-FDS

Hon. F. Dennis Saylor IV

**DEFENDANT GOOGLE LLC’S RESPONSE TO SINGULAR COMPUTING LLC’S  
STATEMENT OF UNDISPUTED MATERIAL FACTS IN SUPPORT OF ITS MOTION  
FOR PARTIAL SUMMARY JUDGMENT OF NO INVALIDITY UNDER 35 U.S.C. § 101**

Pursuant to Fed. R. Civ. P. 56 and Local Rule 56.1, Defendant Google LLC (“Google”) submits the following response to Plaintiff Singular Computing LLC’s (“Singular”) Statement of Undisputed Material Facts in support of its motion for partial summary judgment of no invalidity under 35 U.S.C. § 101.

| No. | Singular’s Purported Statement of Fact  | Singular’s Purported Supporting Evidence                                 | Google’s Response to Singular’s Purported Statement of Fact   |
|-----|---|--|---|
| 1.  | Singular is the owner by assignment of U.S. Patent No. 8,407,273 (“the ’273 patent”). | Amended Complaint, ¶¶ 27-28; U.S. Patent No. 8,407,273 (Dkt. No. 112-2). | The ownership of the ’273 patent is not material to any issue raised by Singular’s motion. Allegations in the Amended Complaint are not evidence, and the face of the ’273 patent is not evidence of its present ownership.<br><br>If the Court concludes that this fact is material to Singular’s motion, then for the purposes of this motion |

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|    |   |  | only Google does not dispute this fact.  |
| 2. | Singular is the owner by assignment of U.S. Patent No. 9,218,156 (“the ’156 patent”).   | Amended Complaint, ¶¶ 27-28; U.S. Patent No. 9,218,156 (Dkt. No. 112-3). | <p>The ownership of the ’156 patent is not material to any issue raised by Singular’s motion. Allegations in the Amended Complaint are not evidence, and the face of the ’156 patent is not evidence of its present ownership.</p> <p>If the Court concludes that this fact is material to Singular’s motion, then for the purposes of this motion only Google does not dispute this fact.</p> |
| 3. | On March 31, 2021, the Court issued an memorandum and Order denying Defendant’s Motion to Dismiss.  | Dkt. No. 51.   | The Court’s order issued on June 25, 2020, but that date is not material to any issue raised by Singular’s motion.   |
| 4. | On July 27, 2022, the Court issued a Memorandum and Order on Claim Construction.  | Dkt. No. 354.  | Undisputed.  |
| 5. | <p>Claim 53 of the ’273 patent recites the following:</p> <p>A device:</p> <p>comprising at least one first low precision high-dynamic range (LPHDR) execution unit adapted to execute a first operation on a first input signal representing a first numerical value to produce a first output signal representing a second numerical value,</p> <p>wherein the dynamic range of the possible valid inputs</p> | ’273 patent.   | Google does not dispute that, in substance, claim 53 of the ’273 patent so recites when all claims from which claim 53 depends are written out.  |

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|    | <p>to the first operation is at least as wide as from 1/1,000,000 through 1,000,000 and for at least <math>X=5\%</math> of the possible valid inputs to the first operation, the statistical mean, over repeated execution of the first operation on each specific input from the at least <math>X\%</math> of the possible valid inputs to the first operation, of the numerical values represented by the first output signal of the LPHDR unit executing the first operation on that input differs by at least <math>Y=0.05\%</math> from the result of an exact mathematical calculation of the first operation on the numerical values of that same input;</p> <p>wherein the number of LPHDR execution units in the device exceeds by at least one hundred the non-negative integer number of execution units in the device adapted to execute at least the operation of multiplication on floating point numbers that are at least 32 bits wide.</p> |              |   |
| 6. | <p>Claim 7 of the '156 patent recites the following:</p> <p>A device comprising:</p> <p>at least one first low precision high-dynamic range (LPHDR) execution unit adapted to execute a first operation on a first input signal representing a first numerical value to</p>   | '156 patent. | Google does not dispute that, in substance, claim 7 of the '156 patent so recites when all claims from which claim 7 depends are written out. |

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| <p>produce a first output signal representing a second numerical value,</p> <p>wherein the dynamic range of the possible valid inputs to the first operation is at least as wide as from 1/1,000,000 through 1,000,000 and for at least <math>X=5\%</math> of the possible valid inputs to the first operation, the statistical mean, over repeated execution of the first operation on each specific input from the at least <math>X\%</math> of the possible valid inputs to the first operation, of the numerical values represented by the first output signal of the LPHDR unit executing the first operation on that input differs by at least <math>Y=0.05\%</math> from the result of an exact mathematical calculation of the first operation on the numerical values of that same input;</p> <p>at least one first computing device adapted to control the operation of the at least one first LPHDR execution unit;</p> <p>wherein the at least one first computing device comprises at least one of a central processing unit (CPU, a graphics processing unit (GPU), a field programmable gate array (FPGA), a microcode-based processor, a hardware</p> |  |  |
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|  | <p>sequencer, and a state machine; and,</p> <p>wherein the number of LPHDR execution units in the device exceeds by at least one hundred the non-negative integer number of execution units in the device adapted to execute at least the operation of multiplication on floating point numbers that are at least 32 bits wide.</p> |  |  |
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In addition to the facts cited by Singular in its Statement of Undisputed Material Facts, the Court should consider the following relevant and undisputed statements from the written description of the patents. *See* Google’s Statement of Material Facts in support of motion for summary judgment that the asserted patent claims are patent ineligible (Dkt. 470) ¶¶ 7-11.

| No. | Google’s Additional Fact  | Google’s Supporting Evidence                             |
|-----|---|--|
| 7.  | The common specification for the ’273 and ’156 patents states that embodiments of “the present invention” are “directed to computer processors or other devices which use low precision high dynamic range (LPHDR) processing elements to perform computations (such as arithmetic operations).”  | ’273 patent at 5:65-6:2; <i>see also id.</i> at 2:11-18. |
| 8.  | The specification does not set forth any particular structural approach for implementing the allegedly novel LPHDR processing elements. Rather it broadly asserts that “technologies whether based on transistors or not that are capable of implementing LPHDR architectures of the kinds disclosed herein” can be used—including hypothetical approaches such as “chemistry based technologies such as for DNA computing . . . .” | ’273 patent at 26:17-3.                                  |
| 9.  | The specification further states that the word “device” should be understood to mean anything that “performs the functions disclosed” in the patent. This could include   | ’273 patent at 29:5-15, 29:16-19.                        |

| No. | Google's Additional Fact   | Google's Supporting Evidence     |
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|     | "hardware, software tangibly stored on a computer-readable medium, firmware, or any combination thereof."  |                                  |
| 10. | Whatever technology is used, the claims do not disclose any limitation concerning how the numerical values are represented, and the specification emphasizes the absence of any such limitation, noting, for example, that one mechanism could be to use "a logarithmic representation of the values," while another would be to use "analog representations and processing mechanisms." | '273 patent at 6:10-12, 6:23-28. |
| 11. | The specification goes out of its way to assert that "analog and mixed signal embodiments" are "merely examples," and not limitations.   | '273 patent at 16:14-16.         |

Singular's motion is limited to step one of the two-step framework set forth by the Supreme Court in *Alice Corp. v. CLS Bank Int'l*, 573 U.S. 208, 216 (2014). *See* Singular Memo. at 1 ("Singular moves for summary judgment that the asserted claims are not directed to an abstract idea under Step 1 of the *Alice* test for validity under Section 101."); *see also id.* at 3 ("Only Step 1 is at issue with the present motion."). Google agrees with Singular that, for the purpose of deciding step one, there are no material facts of record for which there exists a genuine issue to be tried.

Respectfully submitted,

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**CERTIFICATE OF SERVICE**

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